REMARKS

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WITH AN ACCOUNT OF A

NEW MODE OF SUTURE,

AND

SEVEN SUCCESSFUL OPERATIONS,

BY N. BOZEMAN, M. D.,
OF MONTGOMERY, ALA.

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[From the Louisville Review for May.]

It would appear, from the silence of the older authors in regard to vesico-vaginal fistule, that it was a subject to which they paid little or no attention. But it would not be a fair inference from this circumstance, that the affection did not exist, or that its subjects did not apply for medical or surgical aid. The practice of obstetrics was less well understood then than at present; and it is reasonable to suppose that accidents resulting in fistule were comparatively more frequent. Surgeons must, therefore, at a very early period, have known something about it; but, being unable to afford the necessary relief, they probably supposed that it would be a waste of words to record anything upon the subject. And, indeed, in turning to the written experience of more modern surgeons, we find that no advance was made toward the proper understanding and treatment of the disease until within the last quarter of a century. It is true, that previous to that time, it had been repeatedly described, and several methods of treatment had been proposed; but the profession manifested but little interest in the former, and the latter proved beneficial only in a very few cases. Now, however, there is no subject in surgery with the pathology and symptomatology of which we are better acquainted; and, as I hope to show in the few following pages, there is no disease of equal severity that is more amenable to operative procedure. But, before entering upon the subject, I shall premise a few anatomical considerations, which seem to me necessary to its proper understanding.

Anatomy.—The base of the bladder, as is well known, rests upon the anterior wall of the vagina, a small quantity of connecting areolar tissue alone intervening. The union of the two constitutes what is called the Vesico-Vaginal Septum, which is composed, therefore, of muscular and erectile tissue, covered upon both surfaces by mucous membrane. The shape of this septum, *i. e.*, the outline of the union of the two walls, resembles, somewhat, the heart upon playing cards, its base presenting upward, the neck of the uterus occupying the notch, and the apex downward and forward, toward the commencement of the urethra. Its area comprises, usually, about four square inches; and it may be stated here, that a clear knowledge of its shape and extent is oftentimes of the utmost importance in a surgical point of view; for, immediately outside of the limits mentioned, the surfaces of the vagina and bladder are invested with peritoneum, and any operation involving this structure is of course attended with additional risk.

Situation, Size, &c.—The most common situation of the opening constituting vesico-vaginal fistule is usually about the centre of the vesico-vaginal septum; but it may occur at any point: I have met with cases in which it seemed to occupy the extreme border of the septum. The size of the orifice may be no larger than barely to admit a tolerably large probe; but instances are on record in which the whole septum had sloughed away, thus leaving a chasm of enormous dimensions, through which the superior fundus of the bladder protruded, and made its appearance at the vulva, in the form of a large, fleshy-looking tumor. The shape of the fistulous opening is as various as its size and situation, but may be stated, as a general rule, to be oval from above downward, although the long axis is not unfrequently oblique or even transverse in its direction. The number varies from one to several; but I have never met with more than two. Of ten cases that have come under my observation, four were of the double variety, and the remainder single.

The presence of more than one fistule is a circumstance of considerable importance in reference to the chances of successful operation, as I shall presently attempt to show, and it is not a little surprising that writers upon the subject have

so entirely overlooked this not uncommon complication. It is in cases of this kind that the method of operation which I am about to propose possesses, in my judgment, an advantage unequaled by any procedure heretofore invented.

The common *causes* of vesico-vaginal fistule are impaction of the child's head in the pelvis in protracted labors, and the misuse of forceps in instrumental deliveries; the vesico-vagnial septum in either case being so much injured as to fall into a state of mortification, involving a smaller or larger part of its extent. It is also an occasional result of lithotomy performed through the vagina; of malignant disease of the neck of the uterus, and of ulceration produced by the presence of a foreign body in the bladder or vagina. Mr. Brown, of London, reports a case which was occasioned by the combined presence of a calculus in the bladder, and the occurence of parturition.

The *symptoms* of the disease are few, but well marked. Dribling of urine from the back part of the vulva coming on within a few days after labor, and producing excoriation of the nates and thighs, with an inability to empty the bladder in the natural way are usually conclusive; but, if any doubt should exist, a resort to a digital or specular examination will readily place the diagnosis upon a positive footing.

The *prognosis*, formerly pronounced to be unfavorable in all cases, may be now stated to be favorable in the great majority—a change which, considering the loathsome and disgusting nature of the malady, cannot but inspire the heart of every truly philanthropic surgeon with just and unbounded pride in his beneficent and noble calling.

Treatment.—Until within a few years past, so uniformly unsatisfactory were the results of the treatment of vesico-vaginal fistule, that many surgeons entirely despaired of ever being able to offer the poor afflicted subjects of this malady any hope whatever of permanent relief. But still, from time to time various plans were proposed, some of which proved more or less beneficial, and others again entirely useless. Among the former was cauterization with the hot iron, which having produced a few permanent cures, and mitigated many cases, was a step considerably in advance of the old practice of pronouncing all cases incurable. Indeed, this operation is

still viewed by many otherwise intelligent surgeons, especially in Europe, as almost the only hope of relief. Among its most strenuous advocates may be mentioned M. Dupuytren and Mr. Liston, who, although now dead, are nevertheless considered as the representatives of modern surgery in the respective countries to which they belonged. That the actual cautery has done much good in many cases cannot be denied; but so uncertain a procedure, even in the hands of such men as the two just mentioned, justly claims but a minor consideration in the estimate of those who are fully acquainted with the present resources of the chirurgical art.

Succeeding the actual cautery, came the suture, which is said to have been proposed for the relief of the disease about the middle of the seventeenth century by a Dutch surgeon by the name of Roonhuysen. The practice was afterwards adopted by Fatio and Voelter, but with what success we are not informed; but it certainly could not have been very encouraging, as it soon fell into disuse. About the beginning of the present century, however, the suture was revived and, variously modified, has formed the basis of almost every successful mode of treatment that has been practiced both in Europe and this country.

In Germany different modes of employing the suture have been from time to time adopted. Wutzer and Dieffenbach are said to have practiced it with the most success. The former is stated by Chelius to have advanced considerably farther than his predecessors by conjoining puncture of the bladder for the purpose of keeping this organ empty, and thus preventing the contact of the urine with the parts under operation. Little or no improvement, I apprehend, has been made upon the operation of these surgeons by their countrymen, judging from the recent procedures of Roser, Simon, Teuner and Boeck.*

In France the suture has undergone many ingenious modifications for the purpose of rendering it more efficient in the treatment of the affection under consideration, and for some of them considerable success is claimed. An account of them, however, would much transgress the limits of this

* Amer. Med. Monthly, Aug., 1855.

paper, and prove at best more curious than useful. Of their general success and the estimate in which they are held, some idea may be had from the following remarks of Velpeau: "The suture, which must have first suggested itself to the mind, is of such difficult application that but few practioners have ventured to make trial of it, so that scarcely any mention is made of it in the works which have issued from the school of Paris. To abrade the borders of an opening when we do not know where to grasp them, to shut it up by means of needles or thread when we have no point apparently to secure them, to act upon a moveable partition placed between two cavities hidden from our sight, and upon which we can scarcely find any purchase, has appeared to be calculated to have no other result than to cause unnecessary suffering to the patient."*

Such is the opinion of the erudite and accomplished surgeon of the Hopital de la Charite, an opinion derived doubtless from a careful consideration of all the operative procedures that have been suggested or tried in France, Germany, and Great Britain. And the statement of his distinguished cotemporary M. Vidal (de Cassis) is not less discouraging. His words are: "I do not believe that there exists in the science of surgery a well-authenticated complete cure of vesico-vaginal fistule, a fistule due to a loss of substance from the bas-fond of the bladder."† Of the success of the autoplastic operations devised and practiced by Jobert and Gerdy, we have no positive information. The former surgeon also operates with the suture, and there is reason to believe that he has met with much more encouraging results than any of his European brethren.

Turning now to Great Britain, what do we find has been accomplished there in the treatment of vesico-vaginal fistule? London surgeons, with all their hospital advantages, until within a very few years past, gave this subject little or no attention. Neither Sir Charles Bell, Sir Astley Cooper, nor Mr. Samuel Cooper have so much as alluded to it, either in their writings or lectures. Mr. Robert Liston devotes to it but one paragraph, and, as it appears, attached more import-

* Operative Surgery, Vol. 3. † Pathologie Externe. 2d edit.

ance to what could *not* rather than what could be done by the surgeon. "Attempts," says he, "have been made to close the aperture by paring the edges, and then inserting sutures; but this is a proceeding both difficult in execution, and not likely to prove successful. The thinness of the parts, the presence of a secreting surface on each side, and the oozing of acrid urine betwixt the edges, all militate strongly against adhesion. No benefit can be expected from any treatment, unless the opening be of no great size; and, in such cases, the cautery will be found most effectual. * * * By the cautery I have succeedeed in relieving many, and in curing a few cases."*

Druitt, in his "Surgeon's Vade-Mecum," devotes to this and four or five other diseases, together with their treatment, only a single page. The senior surgeon to Guy's Hospital, Mr. Bransby B. Cooper, it seems, has no experience at all with its treatment. He speaks of it as being most difficult of cure: "My colleage, Dr. Dever," he says, "has had several cases of recto-vaginal and vesico-vaginal fistule, which he has attempted to obliterate by plastic operations and sutures, caustics, and the actual cautery. The result of his experience proves, however, that very few cases are ever permanently cured, although by means of the actual cautery, he has frequently reduced the abnormal opening to the size of a pin's head; but I believe that only in one or two cases has he succeeded in producing a permanent cure."† Mr. Erichsen says, that urethro-vaginal fistule, when small, may sometimes be closed by applying the electric cautery or red-hot wire to its edges, once a fortnight or three weeks; but he further remarks "when the fistule is large, and especially when vesical, its cure can be accomplished only by paring the edges, and bringing them together with sutures, and thus attempting to procure union by the first intention. In effecting this, however, two difficulties present themselves—the sutures either cutting their way out too soon, or the trickling of urine between the freshly-pared edges interfering with adhesion." Of the various contrivances employed to overcome these difficulties, he recommends the bead sutures of Mr.

* Elements of Surgery. † Lectures on Surgery.

Brooks, and the clamp suture of Dr. J. Marion Sims. "The treatment recommended by Dr. Sims," he observes, "leaves little to be desired in the management of these cases."* Prof. Pirrie, in his recent work on surgery, does not even mention the disease or its treatment. Mr. Brown, surgeon accoucheur to St. Mary's Hospital, has, within the last few years, gone far ahead of any of his cotemporaries, in the management of those diseases of the female requiring surgical interference. His recent work shows that he has devoted much time and attention to the subject. Although his treatment of the disease under consideration has not been very successful, yet it has been conducted upon enlightened principles. As an illustration of the difficulties to be met with in any operative procedure, he gives the details of four cases treated by himself. Two of these were permanently cured; one, by the actual cautery and incision; and the other, by the quill suture. The remaining two were only partially relieved by the actual cautery and suture combined. Mr. B. employs the clamp as well as the quill suture.

Having thus briefly glanced at the state of surgical science, in reference to the disease in question, in Germany, France and Great Britain, let us turn to our own country, and see what has been done. And here I may state, without the least fear of contradiction, and with no little national pride, that the surgeons of the United States have so far outstripped their European brethren as to place this horrible complaint, which the latter have declared incurable, upon a par, as regards the probabilities of successful treatment, with accidents of like severity affecting other parts of the body.

Drs. Mettauer, of Virginia; Hayward, of Boston; Pancoast, of Philadelphia, and J. Marion Sims, late of Montgomery, Alabama, but now of New York, are the only surgeons in this country, as far as I am informed, who have paid special attention to the subject of vesico-vaginal fistule; and, in noticing their respective operations, it will suit my purpose to speak somewhat in detail concerning the different modes of closing the fistulous opening, as herein lies the superior advantages of one operation over another, as I shall presently endeavor to show.

* System of Surgery.

Dr. Mettauer operated for the relief of this malady as early as 1830.* His method consisted in paring the edges of the fistulous opening, and maintaining them in contact with interrupted sutures made of lead wire. These he carried entirely through the vesico-vaginal septum, at a distance of an inch from the denuded borders. A sufficient number of them having been introduced, the ends of each wire were separately twisted together until firm coaptation of the edges was effected. The twisted extremities were afterwards cut off a short distance exterior to the vulva. On the third day the sutures were tightened by twisting them again ; and about the tenth day they were removed. Such was the original method employed by Dr. Mettauer, and, with but little if any alteration, is the one he still practices. He has performed it quite a number of times, and claims considerable success.

Dr. Hayward, without any knowledge of what had been done by Dr. Mettauer, performed his first operation in 1839, and published it the same year.† He has the credit, I believe, of having been the first to operate successfully in this country; but there is no doubt that Dr. Mettauer preceded him by several years, although the latter did not publish his operation until 1847. The peculiarity of Dr. Hayward's procedure consists in the mode of getting at the parts. He first introduces into the bladder, through the uretha, a whalebone bougie, with which, as a lever, the symphysis pubis serving as a fulcrum, he next brings down the base of the bladder to the vulva, and thereby exposes the fistule fully to view. He then pares the edges of the opening, and brings them together by the ordinary interrupted sutures, which, in their introduction, are not allowed to penetrate the mucous coat of the bladder. The operation being thus completed, and the bougie removed, the bladder is permitted to return to its proper place, and the sutures are allowed to remain until they become detached by ulceration.

This is the method now recommended by Dr. Hayward, although formerly he was in the habit of splitting the edges of the fistule, so as to present a more extensive surface for agglutination, and at the same time lessen the chances of piercing the mucous membrane of the bladder in introducing

* Virginia Medical and Surgical Journal. † Am. Journal Med. Sciences.

the sutures. He also directed the bladder to be again depressed after a certain number of days, and the sutures removed. Dr. Hayward has performed his operation twenty times, but with no very great success, having cured, I understand, but three cases permanently.*

Dr. Pancoast's method consists in adapting the edges of the fistule to each other on the principle of the tongue and groove. The posterior border he splits to the extent of half an inch, and pares the anterior to the shape of a wedge. The former is then made to receive the latter. In this way four raw surfaces are brought in contact, and held in this relation by his plastic suture. How much success Dr. Pancoast has had by this method I am not prepared to state. He reports, in the Medical Examiner, for May, 1847, two cases cured in this manner by himself.

Lastly, we come to consider the method of Dr. Sims, a description of which I deem altogether unnecessary; for, being generally approved by the profession, it is well understood by every one interested in such matters. Suffice it to say that the peculiarity, as well as the great advantages of Dr. Sims' method, are to be found in his clamp suture.

Considering the comparatively small measure of success obtained by Drs. Mettauer, Hayward and Pancoast, it would be useless to enter into a discussion of their relative merits, as I suppose that no one, in this country at least, will be likely to adopt the method of any one of these gentlemen, with the great advantages of Dr. Sims' method staring them in the face. But it is to the latter that I invite attention, and, however bold or fool-hardy the attempt may appear, I hope to be able to show that the clamp suture has serious objections that may be entirely obviated by the procedure presently to be described. In saying this, however, I do not wish to be understood as attempting to detract from the great credit due from the profession and the public to Dr. Sims for his untiring perseverance in bringing his method to its present high state of perfection. I consider that this gentleman is fully entitled to more than all the praise that has been bestowed upon him, both in America and Europe. To the honor of his professional brethren in this country, it may be

* Surgical Reports.

stated that no one has been found who has not gladly accorded to him the high distinction that he at present occupies. I am sorry that the same cannot be said of European surgeons in general, for, with the exception of Mr. Erichsen, Mr. Brown and Mr. Druitt, of London, no one on the other side of the Atlantic has, to my knowledge, proved sufficiently frank to do full justice to Dr. Sims' claims. Fully impressed, therefore, with the importance of the position I assume in attempting to show that the clamp suture is objectionable, I proceed to the task, actuated, as every inquirer after truth should be, by no other motives than a desire to make facts and principles subservient to the great ends of science.

In the first place, then, Dr. Sims states that the "clamp suture lies embedded in the tissues for an indefinite period without danger of cutting its way out as do silk ligatures."* This proposition is doubtless true, so far as it implies that the clamp suture is much less liable to cut out than silk ligatures; but the question is, does not the clamp suture itself irritate and very often cut out? Dr. Sims says not. My experience with it, however, has led me to a different conclusion. I have several times seen it ulcerate out, and that, too, within five or six days, thus entirely defeating the object of its application. When there is much dragging of the parts, this is almost sure to occur. The liability to this accident I have found greatly increased by an indurated condition of the tissues, which very often exists on one or both sides of the fistulous opening. The ill consequences of the ulceration occasioned by one or both clamps are sufficiently evident. Other fistules are in this way liable to be formed, as occurred in a case alluded to by Dr. Mettauer,† and even if this does not take place, the morbid action may extend to the raw edges of the opening, and thus interfere with the healing process. Gangrene and sloughing of the included parts may take place also when the clamps are applied with too much force.

Another objection to the clamp suture consists in the fact that to apply it properly requires more experience than most practitioners of surgery can be supposed to possess. The operator must be able to judge of the condition of the tissues,

* Am. Journal Med. Sciences for January, 1852. † Op. Cit.

whether indurated or not, and whether this condition is confined to one or both sides of the fistulous opening. If induration exists, he must know what precautions are to be observed in the arrangement of the clamps, and the dangers resulting from a neglect of these precautions. Many failures, I have no doubt, can be referred to a want of familiar acquaintance with these matters, which, as just stated, is to be gained only by much experience.

Another, and the greatest objection to Dr. Sims' method, is the frequent impossibility, in cases of double fistule, of applying two sets of clamps at the same time. This I regard as a consideration of the utmost importance. If two fistulous openings are found to exist, and circumstances will allow of but one being closed, failure is almost sure to follow, owing to the escape of urine through the other into the vagina, and its contact with the denuded edges.

Still another objection is the impossibility of making the sutures act only in one direction. They have all to be introduced exactly alike ; each wire must be entered on the same line, at a proper distance from the edge of the fistule, and brought out in a similar manner, so that when the shot are secured in their places, the same amount of traction, and in the same direction, shall be exerted upon each suture. Unless these precautions be observed, the clamp will not lie easy, and is liable to do injury.

Such I conceive to be the most important objections to the clamp suture. There are others of a minor consideration, but they need not be mentioned here.

Very soon after I began to employ this suture in the treatment of visico-vaginal fistule, I discovered these faults ; but it was a long time before I could believe but that it was the best and surest plan of procedure that could be adopted. Failure upon failure occurred, when from the favorable nature of the cases such results were not to be expected. Finally a case of double fistule came under my care. The two openings were in close proximity, and the long axis of one was at right angles to that of the other, thus precluding the possibility of using two sets of clamps at once. Thus circumstanced, I adopted the only alternative, which was to close one and leave the other for a future operation. Accordingly

I applied the clamps to the superior aperture, as the peculiar nature of the parts required that this one should be closed in order that a resting place might be formed for one of the clamps in the next operation. On the tenth day, I found upon examination that the apparatus had cut out entirely. The failure I decided to be due to the injurious effects of the urine upon the denuded borders of the fistule, and upon the raw surfaces produced by the pressure of the clamps; and I became furthermore satisfied that I should never be able to cure the case, unless I could invent some contrivance by which either to close both openings at one operation, or to afford complete protection to the denuded edges of one during the healing process. The thin and raw edges of the fistule when brought together by the clamp suture under such circumstances, are necessarily acted upon by the poisonous urine on both the vesical and vaginal surfaces, union by the first intention being thereby rendered very improbable, even under auspices otherwise most favorable, and in the majority of instances almost clearly impossible. To contrive an apparatus that would fulfill one or the other of these indications required, I supposed, much more inventive talent than I possessed; and after a little thought, I abandoned all hope of providing anything that would answer the purpose. Sometime afterwards, however, while buttoning my vest, it occurred to me that a somewhat similar process might be applied to such cases as the one above cited, and after turning the matter over in my mind, I determined to put the idea in practice. Accordingly I made a contrivance on the button principle, and applied it in a case where the clamp suture had failed three times. The result was, as it has been in every trial since, as satisfactory as could be desired.

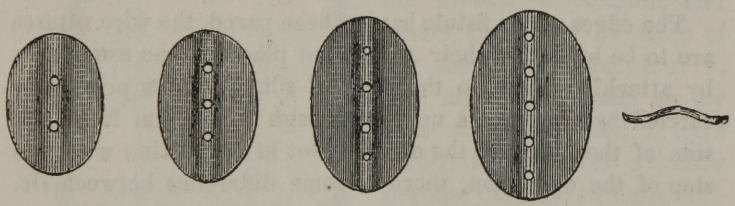
With such flattering results in its favor, I propose now to offer the operation to the profession for what it is worth. It will be found to be simple and easy in its performance, applicable to the great majority of cases, and devoid of any inconvenience to the patient. From its construction, mode of action, and the circumstances which led to its adoption, I shall call it the *Button Suture*. It is, however, only a modification of the twisted, as the clamp is a modification of the quill suture. After a brief description of the apparatus, and

the mode of applying it, I shall add the details of four successive cases requiring seven operations in which I have employed it without a single failure.

The essential parts of the apparatus consist of wire for the sutures, a metallic button or plate, and perforated shot to retain the latter in place. The wire should be made of pure silver, about the size usually marked No. 93, and properly annealed. A length of about eighteen inches should be allowed for each suture.

The button possesses several peculiarities. It may be made of either lead or silver. The former, hammered out to the thickness of 1-16th of an inch, answers the purpose tolerably well. The latter can be made still thinner, and does better on several accounts ; it is lighter, less likely to yield under pressure, admits of a higher polish, and allows the wires to be drawn through the small holes, without dragging.

Fig. 1.



Full Size. End View.

The object of the button is to cover the fistulous opening after the introduction of the sutures, and its size and shape will therefore vary somewhat according to circumstances. The shape of those that I usually employ is oval (fig. 1,) but they may be circular, simi-circular, L or T shaped, to suit individual cases. The size will also necessarily vary, but it is seldom that one larger than the largest here represented, say 1 1-4 inches in length and 5-8ths of an inch in breadth, is required.* But whatever the shape or size, it is a matter of great importance that the under surface should be slightly concave, and the edge turned up. Along the middle of the button are arranged perforations for the passage of the sutures, which should be sufficiently large to admit two thicknesses of the wire freely. The number of these openings will depend of course upon the number of the sutures, which are usually placed about 3-16ths of an inch apart.

* Recently I employed a semi-circular one, which was nearly two inches in length and contained eight perforations.

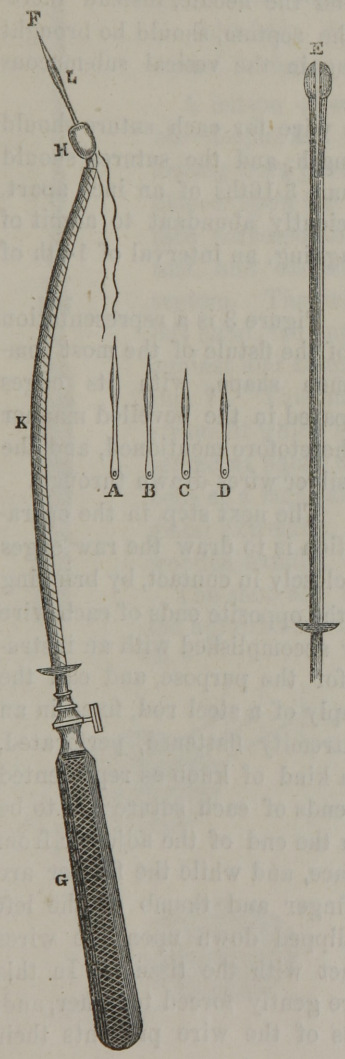
The shot are No. 3 in size, and perforated for the passage of the wires.

Operation.—In remarking upon the different operations which have been performed in this country, I stated that I should confine myself mainly to a consideration of the several *modes of suterization*, and, singling out that of Dr. Sims as the only one deserving of notice, I have attempted to show wherein it is deficient. It is not necessary, nor is it my purpose, to enter into a detailed account of the earlier steps of the operation; for in regard to these matters Dr. Sims has left little or nothing to be desired. I must mention, however, that I generally bevel the edges of the fistule upon the vaginal aspect to a greater extent than is recommended for the clamp suture. The object of this is to obtain large surfaces for agglutination, and at the same time to admit of a sufficiently firm degree of approximation to prevent if possible the least passage of urine through the part.

The edges of the fistule having been pared, the wire sutures are to be lodged in their respective places in the usual way, by attaching them to the ends of silk ligatures previously carried by means of a needle through the septum from one side of the fistule to the other. But in connection with this step of the operation, there is some difference between Dr. Sims' procedure and my own. In the first place, I do not usually take so firm a hold of the tissues, the space between the entrance of the needle and the edge of the fistule rarely if ever exceeding half an inch, and it matters not whether the parts be indurated or not, the wire is not likely to cut out very soon. Secondly, it is not necessary to observe the same scrupulous care in entering and bringing out the sutures upon an exact line with each other; for, as will be hereafter understood, each one is in its action entirely independent of the others. Thirdly, instead of being obliged always to place the sutures parallel with each other, I have it in my power, if the peculiar nature of the case indicate, to insert them in any direction, and am thus enabled to bring within the sphere of successful treatment a large class of cases, which, owing to the irregular shape of the fistule, and the scarcity of tissue not admitting of extensive paring, cannot be subjected to the clamp suture.

In regard to the needle for passing the ligature, there is great diversity of opinion. Nearly every operator has one to suit his own peculiar fancy, and probably uses it, after some little experience, to better advantage than he could any other. M. Jobert recommends the spear-pointed spring canula of Lewziski. Dr. Druitt prefers the fish hook needle, and some surgeons employ the ordinary short curved variety.

Fig. 2.



I am myself in the habit of using one that is short, straight and spear-pointed, as represented in fig. 2, A, B, C, D, the length varying from a half to three-fourths of an inch.

The needle-holder or clasp may be straight (fig. 2, E) as recommended by Dr. Sims, Mr. Brown, of London, and others, or it may be made of the shape represented at F. The latter was made at my own suggestion, and I have found it to answer a better purpose than the straight variety where the fistule is situated far to one side or the other. It consists simply of the ordinary steel clasp (H) having a long substantial shaft and a flexible metallic canula (K) for the purpose of approximating the branches of the clasp. The latter are furrowed in various directions for the purpose of holding the needle firmly, and allowing it to be placed at any angle that may be desired. (At L may be seen a needle clasped and ready for use.)

The introduction of the needle in reference to the struc-

tures to be penetrated, is justly considered a matter of no little importance. Dr. Mettauer and some others advise that the instrument be carried entirely through the vesico-vaginal septum. Drs. Sims and Hayward strongly disapprove of this practice on the ground that other fistules may thus be produced; and I fully agree with them. Indeed, I consider that too much care cannot be taken to avoid piercing the mucous coat of the bladder; and the needle, instead therefore of being carried through the septum, should be brought out at the edge of the opening in the vesical sub-mucous areolar tissue.

As heretofore mentioned, the wire for each suture should be about eighteen inches in length, and the sutures should be placed usually not more than 3-16ths of an inch apart, although if the tissue be sufficiently abundant to admit of easy approximation without dragging, an interval of 1-4th of an inch may be left.

Fig. 3.

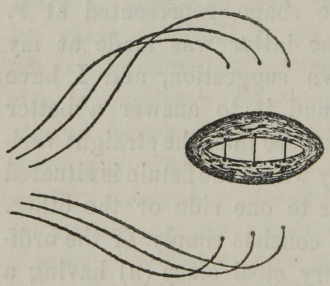
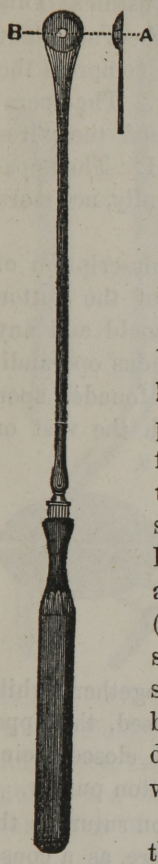


Figure 3 is a representation of the fistule of the most common shape, with its edges pared in the bevelled manner heretofore mentioned, and the silver wires drawn through.

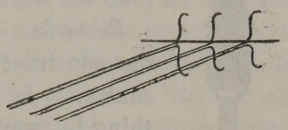
The next step in the operation is to draw the raw edges closely in contact, by bringing the opposite ends of each wire together. This may be readily accomplished with an instrument which I have invented for the purpose, and call the *suture adjuster*. It consists simply of a steel rod, fixed in an ordinary handle, its distal extremity flattened, perforated, and raised upon one side into a kind of knob as represented at A, figure 4. The opposite ends of each suture are to be passed through the aperture in the end of the adjuster from the convex toward the flat surface, and while the former are held firmly between the forefinger and thumb of the left hand, the latter is carefully slipped down upon the wires until it comes closely in contact with the tissues. In this way the edges of the fistule are gently forced together, and, for the time being, the stiffness of the wire prevents their

Fig. 4.



separation. Should it be found, however, that accurate coaptation does not take place, owing to the imperfect manner in which the edges have been pared, the sutures may be readily loosened, and the defect remedied without the neceessity of withdrawing the wires. The appearance of the parts, after all the sutures have been adjusted, is faithfully represented in figure 5.

Fig. 5.



A button of suitable shape and size having been previously provided, is now to be placed upon the wires, (fig. 6) its concave surface corresponding to the vesico-vaginal septum, and carried down in contact with the septum. The wires being again held in the left hand, the button should be pressed gently against and adapted to the surface of the parts (fig. 7). This may be accomplished by an instrument which I call the *button adjuster*, represented at figure 8, consisting of a stiff iron rod, bent at a right angle within half an inch of its distal extremity, and inserted into an ordinary wooden handle.

The shot are to be now passed down over the approximated ends of each suture (fig. 9) to the convex surface of the button, and here each one is to be successively grasped with a pair of strong forceps, (such as is represented at figure 10,) and held against the button, while traction is made upon the corresponding suture, in order to bring the vaginal surface of the septum in close contact with the concave surface of the button, and insure

Fig. 6.

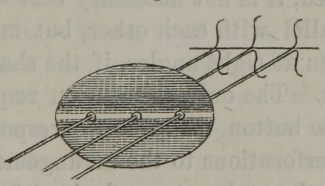


Fig. 7.

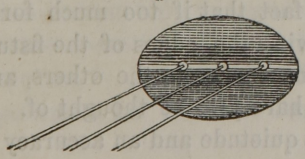
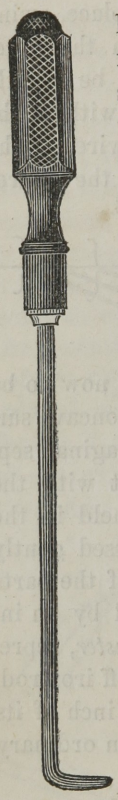


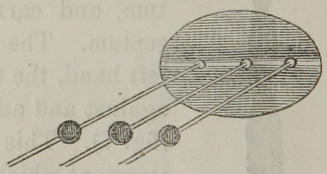
Fig. 8.



close coaptation of the edges of the fistule. This having been satisfactorily accomplished, sufficient force is exerted upon the forceps to compress the shot, and thus prevent its slipping. The operation is then concluded by clipping off the wires close to the shot, as seen at figure 11. The apparatus is allowed to remain on, generally, not more than ten days.

Remarks.—After the foregoing description of the construction and application of the button suture, it is unnecessary that I should add any thing by way of explaining its modus operandi. Its principle, as heretofore stated, is founded upon and is analagous to that by which the vest or other clothing is ordinarily fastened.—The only marked difference is, that in the latter process the button is first secured to the vest, and then the two sides brought together; while in the former the process is reversed, the opposite edges of the opening to be closed being brought together, and then the button put on.

Fig. 9.



One of the marked peculiarities of the button suture is the separate and independent action of each wire, as a consequence of which, as before stated, it is not necessary that the separate points should be parallel with each other, but may be placed in any direction, even at right angles, if the shape of the fistule should require it. The only precaution requisite is to have the shape of the button made to correspond to that of the fistule, and its perforations to the arrangement of the points of suture. Another advantage derived from this circumstance consists in the fact that if too much force be applied to one suture in drawing the edges of the fistule together, no injury results in consequence to the others, and such an accident as sloughing is hardly to be thought of.

By means of the button suture quietude and an accuracy of

Fig. 10.

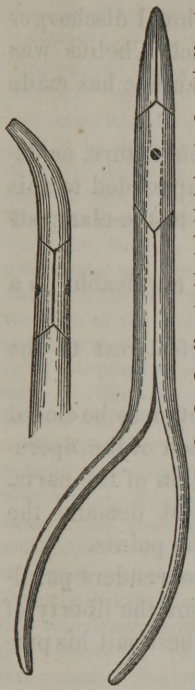
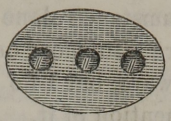


Fig. 11.



approximation are secured to a greater degree than by any apparatus that has ever before been invented, two circumstances upon which the cure of fistules oftentimes solely depends. Splints properly adapted to the arm in transverse fracture of the humerus do not hold the fractured ends of the one so accurately in apposition as does the button suture the edges of the fistule. But, unlike splints applied to the limbs, there is little or no outside pressure upon the approximated edges of the fistule, for, by the concave form of the under surface of the button, the pressure is thrown some distance off, and any injury that might result from this circumstance is entirely obviated.

But probably one of the most important advantages of the button suture is the protection that it affords to the denuded edegs of the fistule. It is a fact well known to surgeons, that a simple incised wound will heal with much more rapidity when shielded from the atmosphere and all other extraneous influences, than, all other circumstances being equally favorable, when there is no such protection. Vesico-vaginal fistule, after the edges have been pared, being truly an incised wound, is subject, of course, to the same general laws. The button fulfills this indication of protection with positive certainty, if its application be properly attended to. It is true that in a deep cavity like the vagina, the opposite walls of which are nearly always in contact, the atmosphere can have little or no effect upon the affected parts. But there are other and far more obnoxious influences to shut out; and of these the urine, in cases of double fistule, is most hurtful, for, as it is not commonly the case that both openings are closed at the same operation, the one first operated on, without some protection, is continually bathed in this poisonous fluid. I say *poisonous*, for few will deny to urine such an influence upon

raw surfaces, and the consequence is that failure from this circumstance alone oftentimes occurs. Leucorrhœal discharges are also more or less harmful, a fact of which Chelius was aware, but I do not know that any other author has made mention of it.

Summary.—My experience with the button suture, as detailed in the history of the seven operations appended to this paper, has, I think, established its superiority to the clamp suture in the following particulars :

1st. It is simpler in its construction, and applicable to a greater number of cases.

2d. It affords complete protection and perfect rest to the approximated edges of the fistule.

3d. If two fistulous openings exist, one or both may be closed at the same sitting, according to the inclination of the operator or patient, without reference to the condition of the parts.

4th. The introduction of the suture does not demand the same exactness in regard to the position of the points.

5th. The independent action of each suture renders parallelism unnecessary, and thus gives the operator the liberty of introducing them in whatever direction may best suit his purpose.

6th. If perfect coaptation be found wanting after the edges of the fistule have been brought together, it is not necessary to remove the sutures, but simply to loosen them in order to perfect the paring.

7th. The apparatus does not irritate, it matters not what the condition of the parts may be, provided they are not in a state of progressive ulceration or inflammation.

8th. The apparatus requires to remain in position seldom longer than ten days.

Having thus completed an imperfect account of the construction of the button suture, and attempted to establish for it the first place among similar contrivances for the treatment of vesico-vaginal fistule in the estimate of the profession, I shall conclude this paper by an account of all the cases in which it has been employed, subjoining a simple statement of its success in comparison with that of other procedures.

CASE I.—*Vesico-Vaginal Fistule of nearly three years standing; failure of three operations with the Clamp Suture; one operation with the Button Suture entirely successful.*

THE patient was a young colored girl of small stature and delicate constitution. She was confined with her first and only child, August, 1852, and states that she was in labor about forty hours; the child, which was large, having to be eventually removed with instruments. Several days after delivery, dribbling of urine occurred from the vagina, which continuing, together with other indisposition, confined her to bed for five or six months The following spring she was operated upon according to the method of Dr. Sims', but was not relieved. She came under my charge a short time afterwards, and upon examination, I readily discovered a circular opening about the size of a No. 6 catheter, occupying the vesico-vaginal septum near the neck of the uterus and a little to the left side. On the right side the tissues were in a normal condition, but on the left very much indurated. After due preparation of the systam, I applied the clamp suture in the usual way. On the thirteenth day, I examined and found that the clamp on the left side had cut entirely out, and the aperture considerably enlarged.

Shortly after this unsuccessful operation, the patient's general health became very much impaired, and it was thought advisable to allow her to return home. I heard no more of the case until April of 1855, when she was again placed under my care, having, in the meantime, entirely regained her usual good health. I found on making an examination, that the fistule was somewhat smaller than when I last saw her, but the induration of the left border still existed. Aside from this latter circumstance, I considered the case altogether favorable and felt very confident that an operation would prove successful. Accordingly, on the 12th of April, I applied the clamp suture again. The edges of the fistule came together beautifully, but owing to the indurated condition on the left side, the corresponding clamp could not be made to embed itself, and consequently rested on a plane higher than the one on the opposite side. Notwithstanding this rather unfavorable feature, I was very sanguine of success. On the thirteenth day, I examined the parts, and, to my great mortification, saw that the left clamp had again cut out, and thus enlarged the opening.

After two such signal failures with the only operation that I then considered worthy of confidence, I was much discouraged, and had serious thoughts of abandoning the case altogether; but it was only a week or two subsequently, that the principle of the button suture first suggested itself to me, and I immediately determined to subject the case to an experimental trial. All things being ready, on the 12th of May I put the new method in operation. Everything seemed to progress favorably. On the thirteenth day, I removed the apparatus, and to my great delight found the festule completely closed, and not the slightest evidence of irritation except what might be naturally expected around each suture.

CASE II.—*Two Vesico-Vaginal Fistules of seven months standing; two operations with the Button Suture; both entirely successful.*

KITTY, a colored girl of small stature, aged 18, was sent to me from a neighboring county, on the 24th of May, 1855. She stated to me that she always enjoyed good health until the birth of her second child, the preceding October, with which she was in labor three days; the child was of large size, and had to be mutilated before delivery could be effected. She did not discover

dribbling of urine until the second week; during labor and for some time afterward, she had a numb of feeling in the lower extremities; was not able to leave the bed for two months, and even then could not walk. From that time until she came to me, she sat the greater portion of her time upon a stool with a hole in it, to allow the urine to dribble into a vessel placed beneath. Owing probably to the constancy of that position, sciatica was induced and greatly augmented her sufferings.

Her appearance, when I first saw her, was the most perfect picture of misery that I ever beheld; emaciated to such a degree that her lower extremities were not larger than chair posts; unable to walk or even to stand; racked with pain; writhing under the excoriating effect of the uncontrolled urine; with the fatigue of traveling nearly two hundred miles added; all taken together, rendered her an object of the most extreme commiseration. After allowing her to rest for a couple of days, I made an examination, found her thighs and buttocks extensively excoriated, the labia majora almost completely encrusted by calcareous matter, and so sensitive, that the least effort to separate them caused excruciating pain. Before the vagina could be explored, this deposit had to be removed, and even then the suffering was considerable, owing to an extreme irritable condition of the organ, and a protrusion of the mucous coat of the bladder through the fistulous opening. When the speculum was introduced, I discovered that the posterior wall of the vagina could not be raised up with usual facility. This I soon found resulted from a morbid attachment of its two walls. The adhesion extended obliquely across from the right side of the cervix to the left side of the vagina, thus concealing from view the os uteri, and rendering an exploration of the entire canal impossible. A fistulous opening, three-quarters of an inch in length, occupied the vesico-vaginal septum, and extended from near the beginning of the urethra obliquely upwards and to the left, terminating abruptly at the point of coarctation. Here a careful examination revealed a small opening which allowed a probe to pass into the *cul de sac* above, and from thence into the bladder, showing clearly that another fistule existed in this situation. Having thus ascertained the true condition of things, I became satisfied that two operations would he required. The fistule first described was accessible, and demanded my first attention, owing to its larger size and the very irritable state of the mucous coat of the bladder which protruded through it. I thought it advisable, however, before attempting any operation, to improve the patient's general health. Accordingly she was put upon the use of Precipt. Carb. Iron three times a day, and confined to bed upon her back, with a catheter in the urethra, in order to divert the urine from the vagina and excoriated parts as much as possible. Under this course of treatment she very soon began to mend, and not long afterwards could walk about; which she had not attempted before for months.

June 12th, I proceeded to apply the button suture to the lower opening. Much difficulty was encountered in paring the edges, owing to the great resistance of the patient, and the herniated condition of the mucous coat of the bladder. Four sutures were required; the button was 7-8ths of an inch in length, and about 5-8ths in width. For two or three days after the operation there was considerable fever, and pain in the hypogastric region, and I feared something serious might result; but things soon took a favorable turn, and the case seemed to do well until about the seventh day. At this time a

great discharge of urine occurred from the vagina, and my first impression was that the sutures had given away ; but upon examining the parts carefully, I discovered the whole of the difficulty to depend upon tympanitic distension of the bowels, attended at times with powerful peristaltic action. When the latter would occur, I found that there was a sudden increase in the flow of urine, clearly resulting from downward pressure upon the bladder. To obviate the trouble, I gave several remedies, mostly carminatives ; but none of them seemed to be productive of any good. Finally, I resorted to the use of Turpentine, which answered the purpose to a very great extent, though not entirely.

Feeling a little uneasiness as to the result, notwithstanding the discovery of the source of trouble, I determined on the ninth day to remove the apparatus. Upon introducing the speculum into the vagina, the parts presented indeed a most unpromising appearance ; the mucous membrane was of a deep red color, and the button completely encrusted with earthy matter. I now had a firm presentiment that all was not right ; but when the sutures were clipped, and the button raised, I found to my great satisfaction, that union of the parts was perfect.

The catheter was worn a few days longer, and the patient then allowed to get up. Her general health now improved rapidly, and it was not long before her sciatica entirely disappeared.

In a few weeks I made preparation for the other operation, by first breaking up the morbid adhesion between the two walls of the vagina, so as to expose the fistulous opening above. To prevent reunion of the parts, a bag, made of oil silk and stuffed with bits of sponge, was introduced into the vagina. This was removed daily, and injections of cold water used, by which means the upper extremity of the vagina was in a few weeks dilated to its normal size, and the fistule well exposed.

August 23d, everything appearing as favorable as could be expected, I proceeded to operate ; only three sutures were required ; but as in the former operation, I had much difficulty, owing to the resistance of the patient. Tympanites supervened again several days after the operation, and caused the patient a good deal of suffering ; but with this exception the case did well.

On the ninth day I removed the apparatus, and had the satisfaction of finding an entirely successful result, and not the slightest irritation had been produced. The improvement of the patient, in every respect, was now rapid ; and when I discharged her in September, she was as active and sprightly as though she had never had a sick day.

Remarks.—The bad health of this patient, the existence of two fistulous openings, a herniated condition of the mucous coat of the bladder, a morbid attachment of the two walls of the vagina, and an exceedingly irritating quality of the urine, were all circumstances which strongly militated against the treatment. It is indeed one of the most remarkable cases that has ever come under my observation, and, I may add, that a better case for illustrating some of the advantages claimed for the button suture, and especially that of protection to the denuded edges of the fistule from the poisonous effects of the urine, could not have been selected. After removing the button employed in the first operation, its very shape and size were found impressed upon the parts over which it rested during the healing process, and the pale red color of the mucous membrane here, contrasted beautifully with the deep red and

fiery appearance of that which had been exposed to the urine escaping through the upper opening.

CASE III.—*Two Vesico-Vaginal Fistules of eighteen years standing; two successful operations with the Button Suture.*

DINAH, a colored woman, stout and heavily built, about 47 years of age, was placed under my charge on the 28th of June, 1855. She stated that the disease under which she was laboring, was produced by the birth of her fifth child in 1837. As well as she could recollect, she was in labor about a day and a half; was attended by a physician, but did not know whether instruments were employed to effect delivery or not. Dribbling of the urine commenced a few days afterwards, and in this condition the poor creature had dragged out eighteen years of miserable existence. During this period she miscarried quite a number of times; only one child having gone to the full time.

Upon examination, I found a fistule near the centre of the vesico-vaginal septem, circular in shape, and sufficiently large to admit the index finger into the bladder. Supposing this to be the only opening, on the 5th day of July I applied the button suture. On the tenth day it was removed, and the parts found to be perfectly united, not the slightest irritation having been produced by the apparatus. In a few days afterwards the patient was allowed to get up, but, to my surprise, there was still dribbling of urine. I apprehended, therefore, that the newly formed cicatrix had given away, and there was a reproduction of the fistule; but making an examination, I discovered that such was not the case. I was now at a loss to account for the appearance of urine; but upon a more careful exploration of the vagina, I found another very small opening, situated far up on the right side, at least an inch from the one I had closed.

The whole difficulty was now explained. Another operation was required; but, owing to the bad health of the patient, I was not able to perform it until the 10th of September.

This fistule, although small, had a peculiarity I had never met with before. It was valvular, *i. e.* the opening through the vaginal part of the septum did not correspond to that of the vesical. Two sutures were sufficient to bring the edges together. Things went on well, and on the tenth day, I removed the apparatus, and found union perfect.

Remarks.—In this instance the fistulous openings were of eighteen years standing, the patient old, and her general health not very good; yet the result was as prompt and decided as could have been desired. One of the great advantages claimed for the button suture, namely, protection to the denuded edges of the fistule, was again forcibly illustrated in this case.

CASE IV.—*Two Vesico-Vaginal Fistules of nine years standing; several failures with the Clamp Suture; Button Suture employed with entire success.*

THE patient, a mulatto girl, aged about 25, of large size, came under my charge in September, 1855. She says that she always enjoyed good health until the birth of her first child in 1846, at which time she became the subject of her present difficulty. According to her account, the labor lasted three days, and during that time she passed little or no urine; does not know whether instruments were employed or not; discovered very soon afterwards dribbling of urine. She also states that she was sent to New Orleans, and there treated

for a long time, with but little if any benefit. Since then she has been operated upon several times according to the method of Dr. Sims, but the relief afforded was only partial.

Upon examination, I found two fistulous openings, one about two inches from the cervix, and a little to the left side; the other, a little larger, was, situated far to the right, at a point just where the anterior and posterior walls of the vagina become continuous.

On the 10th of September, I proceeded to apply the button suture to the larger opening. It was my intention to close the other also at the same time, but the patient preferred to wait. Only two sutures were required, and on the tenth day I removed the apparatus, and found union perfect.

October, the 18th, I operated upon the other fistule. This I found presented the same peculiarity that was observed in the preceding case, in being of a valvular form. Only two sutures were required, and on the tenth day I removed the apparatus, and found adhesion perfect, without the slightest irritation in the surrounding parts.

Remarks.—The result in this case was as satisfactory as could be desired; it needs no comments. If it proves anything, it is that the button suture was better adapted to the case than the clamp suture, which latter had been long and perseveringly tried.

Conclusion.—Having now finished a description of my mode of treating vesico-vaginal fistule, together with the narration of all the cases in which it has been employed, I propose, in conclusion, to compare its results with those obtained by oth. er methods.

Since the 12th of May last, I have performed seven successive operations without a single failure. This is the amount of my experience with the button suture. Now to form anything like a proper estimate of the several modes of treatment heretofore recommended, it is necessary first to ascertain what proportion of the operations according to each have been successful when compared with the whole number performed. In this way only can their respective merits be properly set forth. To effect this object, I have examined, so far as my opportunities allowed, the records both of Europe and this country; but as the data are imperfect, I have not been able to arrive at very satisfactory conclusions.

Chelius speaks of Wutzer as having had the greatest success. Of eighteen cases operated upon, three were radically cured. We are not informed how many operations were performed in all.

Jobert, by the anaplastic process, cures, I am indnced to believe, about one-half of his cases. What proportion of his operations fails, I have not been able to learn.

Mr. Henry Earle is said to have operated thirty times upon one case before succeeding. The failures here were as twenty-nine to one.

Mr. Brown operated ten times upon three cases, and obtained one successful result. The failures here were as nine to one.

Dr. Hayward operated twenty times upon nine cases, and obtained three successful results. The failures here were as seventeen to three.

I am not prepared to state positively what proportion of the whole number of operations performed according to the method of Dr. Sims has been successful. Judging from my own experience, and from what I have seen of it in the practice of others, I am inclined to think that the average is not over one-half.*

In regard to my own cases, it may be supposed by some that they were all peculiarly favorable, which accounts for my unprecedented success; but this was not the case: a reference to their individual histories will show that they were quite the reverse. The very fact of two of them having resisted the repeated application of the clamp suture, is proof sufficient upon this point. The other two were each double fistules, and therefore very unfavorable. One of them, case II, I consider the most unpromising I have ever seen, that was at all curable.

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* A few weeks since, there appeared in the New York Medical Gazette, a notice of the number of the Review containing the above article, in which the writer says that I am mistaken in regard to Dr. Sims' success, and asserts that he (Dr. Sims) has cured, during his residence in New York, thirty cases without a failure.

From this, it would seem that I had done Dr. Sims great injustice. While I here disclaim any such intention, I will simply add, that my language in reference to his and other operations as compared with mine, is explicit, and I am surprised it should have been construed into a meaning so unjust.

That Dr. Sims has done what is claimed for him, I have not the slightest doubt, but this fact has no bearing upon the statement made by me. The point which I endeavored to arrive at, was, what proportion of the operations performed according to different methods, had been successful. The opinion expressed as to the *clamp suture*, was principally based upon my own experience with it. This amounted to eight operations, six of which having been complete failures. If I am in error as to the average success of other operators, it remains to be determined by statistical facts, which are not before me, and so far as my knowledge extends, have never been published.

As additional support to the advantages claimed for the button suture in my paper, I will state that since it was prepared for the press, I have performed eight more operations, making in all fifteen. My twelfth operation was a partial failure. All of the others were entirely successful.

July, 1856.

In conclusion, I freely acknowledge that the results thus far obtained, by the use of the button suture, although so remarkably successful, do not amount to a sufficient number to justify an indisputable claim to superiority over all other procedures; and I do not, therefore, urge its adoption, by the profession, without farther trial. This is all I ask for it at present. My little experience with it has led me to believe that the principles upon which it acts are more nearly correct than any heretofore suggested; but if, upon more careful examination, this be found not true, it will only prove that the success of my seven operations was a most remarkable and heretofore unheard of coincidence.

MONTGOMERY, Jan. 1st, 1856.